crystals, or frozen water particles under a peculiar form in a rarefied atmosphere at a low temperature.—On the topaz and associated minerals found at Stoneham, Maine, by George F. Kunz.—A contribution to the study of the geology of Rhode Island, with map, by T. Nelson Dale.—On the crystalline form of the supposed herderite from Stoneham, Maine, by Edward S. Dana.

SOCIETIES AND ACADEMIES

LONDON

Chemical Society, March 20.—Dr. W. H. Perkin, president, in the chair.—The following gentlemen were elected Fellows:—F. W. Brown, H. Cave, F. W. Fleming, E. E. Graves, A. E. Lewis, J. E. London, G. A. Parkinson, S. Smith, G. Tunbridge, T. U. Walton.—The following papers were read:—Note on the preparation of marsh gas, by Dr. J. H. Gladstone and Mr. A. Tribe. In 1873 (*Chem. Soc. Journ.* xi. 682) the authors described a reaction in which pure marsh gas was obtained by the action of the copper-zinc couple on methyl iodide in the presence of alcohol. The loss of the methyl iodide was considerable, 23 to 50 per cent. In the present note the authors describe a slight modification by which this loss can be prevented. It consists essentially in passing the gas evolved through a vertical tube twelve inches long filled with the copper-zinc couple.—On the action of dibrom-α-naphthol upon amines, by R. Meldola. The author has investigated the action of dibrom-α-napthol upon anilin, orthotoluidin, paratoluidin, and α-naphthylamin. With anilin a body was obtained which proved to be β-naphthoquinonedianilide; similar bodies were obtained with toluidin, &c. This reaction therefore furnishes a simple method of obtaining these quinoneimides in large quantities. The author also discusses the bearing of this reaction on the constitution of these bodies.—Note on the existence of salicylic acid in the cultivated varieties of pansy and in the Violaceæ generally, by A. B. Griffiths and E. C. Conrad. The authors state that they have extracted salicylic acid from the leaves, stems, and roots of the pansy; apparently none exists in the flowers.

Zoological Society, March 18.—Prof. W. H. Flower, F.R.S., president, in the chair.—Mr. Tegetmeier exhibited specimens showing a variation in the colour of the feet of the pink-footed goose (*Anser brachyrhynchus*).—A communication was read from Sir Richard Owen, K.C.B., on the extinct birds of the genus *Dinornis*, forming the twenty-fifth of his series of memoirs on the subject. The present paper gave a description of the sternum of *Dinornis elephantopus*.—Mr. J. B. Sutton, F.Z.S., read an account of the results of his investigations of the more important diseases which affect the carnivorous animals living in the Society's Gardens.—Mr. J. W. Clark, F.Z.S., exhibited and read an account of three skulls of a sea-lion from the east coast of Australia. The largest, that of an adult male, had been exhibited, together with the stuffed skin, at the Fisheries Exhibition last year, where it had been named *Arctocephalus cinereus*, Gray. The object of the paper was to trace the history of the species for which the name *Otaria cinerea* had been suggested by Péron in 1816, and to show, by comparison with the type skull at Paris, that these specimens had been rightly referred to.—A communication was read from the Rev. O. P. Cambridge, in which he gave descriptions of two new genera of spiders proposed to be called *Forbesia* and *Regillus*.

Physical Society, March 22.—Prof. Guthrie, president, in the chair.—The President announced that a meeting of the Society would be held on May 10 at Birmingham, by invitation. The next meeting will be on April 26.—Prof. S. P. Thompson then read a paper by himself and Mr. C. Starling on Hall's phenomenon. The authors had not agreed with Hall's explanation of his observed effect, and last year undertook experiments to investigate its nature. They employed a strip of tinfoil gummed on a mahogany board with vaseline, which, being soft and a non-conductor, answers well for this purpose. A top-shaped electromagnet with a pointed pole was used on one side of the strip to try the effect of a pointed pole. The current was obtained from accumulators. They found that the equipotential lines in the strip, which before magnetisation ran straight across the strip, were slightly curved on either side of the pointed pole after magnetisation. This curving was interpreted as a reduction of resistance in the strip at the pole, and subsequent tests of the resistance of the strips in a magnetic field confirmed this view. Iron strips, however, showed a slight *increase* of resistance. It was also found that an effect similar to Hall's was got by placing the pointed pole so that this change of resistance was not symmetrical with respect to the points in the strip to which the galvanometer was connected. But inasmuch as the effect was not reversible by reversing the magnetism, it was not Hall's effect, which they failed to obtain with the narrow pointed pole. In their experiments thermo-electric effects were eliminated, and their results, though different, do not clash with those of Mr. Bidwell.—A paper by Mr. Herbert Tomlinson on the same subject was read by Prof. Reinold. The author drew attention to a similarity between Hall's table of results and one of his on the effects of mechanical stress on electrical resistance.—Mr. Shelford Bidwell read a note on Hall's effect in tin, in which he showed that a small extension and a greater extension produced opposite thermo-electric effects in tin wires.—In answer to Prof. Guthrie and Mr. Walter Baily, Prof. Thompson stated that the change of resistance he had observed was sub-permanent, and died away in about half an hour. He believed it to be producible on the strip when no current traversed it.—Prof. S. P. Thompson then read a paper on some propositions in electromagnetics, giving a connected series of explanations throwing light on the laws of electromagnetics, and based on a practical experiment.

Royal Microscopical Society, March 12.—Rev. H. W. Dallinger, F.R.S., president, in the chair.—Mr. Glaisher introduced Mr. Dallinger to the meeting on taking his seat for the first time as president, and the latter made a short address in acknowledgment.—Mr. J. Mayall, jun., described the improved Nelson-Mayall lamp, in which the burner could be brought down very close to the table; also Boecker's improved freezing microtome.—Mr. Crisp exhibited Schieck's microscope with fine adjustment made by tilting the stage at one end; also Watson's rotating stage, Collin's set of fish-scales, and a slide of a hydroid polyp with extended tentacles, mounted by Mr. E. Ward.—Notes were read: On a multiple eye-piece by Mr. E. H. Griffith, in which eye-lenses of different powers were mounted on a rotating disk; by Col. O'Hara on some peculiarities in the form of blood-corpuscles; and a communication from a Microscopical Society recently formed at San Francisco, and consisting of ladies.—A paper was read by Mr. T. B. Rosseter describing some peculiar annular muscles in *Stephanoceros*; also by Prof. Reinsch, who stated that he had found bacteria and non-cellular Algæ to exist in considerable numbers on almost all copper and silver coins which had been for some time in currency; also by Mr. G. Massee on the formation and growth of cells in the genus *Polysiphonia*, being a further contribution to the evidence on the continuity of protoplasm through the walls of vegetable cells; also by Prof. Abbe on the distance of distinct vision, in which he pointed out the erroneous inferences which had arisen from the practice of expressing the amplifying power of a lens by reference to a fixed distance of vision (10 inches, or 250 mm.).—Some new forms of cells devised by Mr. Wilks and made by Mr. E. Ward for mounting without pressure in balsam were also exhibited and described.

Royal Meteorological Society, March 19.—Mr. R. H. Scott, F.R.S., president, in the chair.—Messrs. W. Baily, M.A., W. L. Blore, A. L. Ford, H. Leupold, A. F. Lindemann, F.R.A.S., and Rev. E. B. Smith were elected Fellows of the Society.—The President read a paper entitled brief notes on the history of thermometers. He stated that the subject had been handled in a comprehensive manner by M. Renou a few years ago in the *Annuaire* of the French Meteorological Society, so that he should merely mention some of the leading points. The name of the actual inventor of the instrument is unknown. The earliest mention of it, as an instrument then fifty years old, was in a work by Dr. R. Fludd, published in 1638. Bacon, who died in 1636, also mentions it. The earliest thermometers were really sympiezometers, as the end of the tube was open and plunged into water, which rose or fell in the tube as the air in the bulb was expanded or contracted. Such instruments were of course affected by pressure as well as temperature, as Pascal soon discovered. However, simultaneously with such instruments, thermometers with closed tubes had been made at Florence, and some of these old instruments were shown at the Loan Collection of Scientific Apparatus at South Kensington in 1876. They are in the collection of the Florentine Academy, and in general principle of construction they are identical with modern thermometers. Passing on to the instrument as we now have it, Mr. Scott said that most of the improvements in construction in the earliest days of the instrument were due to

Englishmen. Robert Hooke suggested the use of the freezing point, Halley the use of the boiling point, and the employment of mercury instead of spirit, and Newton was the first to mention blood heat. Fahrenheit was a German by birth, but was a *protégé* of James I., and died in England. Réaumur's thermometer in its final form owes its origin to De Luc, while the centigrade thermometer, almost universally attributed to Celsius, was really invented by Linnæus. Celsius's instrument had its scale the reverse way, the boiling point being 0°, and the freezing point 100°. Mr. Scott then gave a brief account of some of the principal forms of self-registering and self-recording thermometers.—After the reading of this paper the meeting was adjourned, in order to afford the Fellows and their friends an opportunity of inspecting the exhibition of thermometers and of instruments recently invented. This exhibition was a most interesting one, and embraced 136 exhibits. The thermometers were classified as follows: (1) standard, (2) maximum, (3) minimum, (4) combined maximum and minimum, (5) metallic, (6) self-recording, (7) solar radiation, (8) sea, (9) earth and well, (10) thermometers used for special purposes, (11) thermometers with various forms of bulbs, scales, &c., and (12) miscellaneous thermometers. In addition to these there were also exhibited various patterns of thermometer screens, as well as several new meteorological instruments, together with drawings, photographs, &c.

Anthropological Institute, February 26.—Edward B. Tylor, Esq., F.R.S., vice-president, in the chair.—It was announced that Dr. Walter H. C. Coffin, Dr. Emil Riebeck, Miss H. M. Hargreaves, and Miss Helen E. Pearson had been elected Members of the Institute.—The Rev. R. H. Codrington read a paper on the Melanesian languages. In the term Melanesia the author included (1) New Caledonia, with the Loyalty Islands; (2) the New Hebrides; (3) the Banks' and Torres' Islands; (4) Fiji; (5) Santa Cruz and the Reef Islands; (6) the Solomon Islands. The object of the paper was to set forth the view that the various tongues of Melanesia belong to one common stock, and that this stock is the same as that to which the other Ocean languages belong—Malayan, Polynesian, the languages of the islands that connect Melanesia with the Indian Archipelago, and Malagasy.—A paper by the Rev. Lorimer Fison, on the "Nanga," or sacred stone inclosure of Wainimala, Fiji, was read by Dr. Tylor. The author explained the constitution of the Nanga, and described the ceremony of initiation and other rites connected with it.

March 11.—Prof. Flower, F.R.S., president, in the chair.—The election of W. Ayshford Sanford was announced.—Mr. A. L. Lewis read a paper on the Longstone and other prehistoric remains in the Isle of Wight.—Mr. W. J. Knowles read a paper on the antiquity of man in Ireland. The author exhibited a series of flints discovered by him at Larne and other parts of the north-east coast of Ireland, some of which he believed to have been dressed in imitation of certain pear-shaped nodules or hammer-stones found at the same spot, while others showed more evident signs of human workmanship. One large chipped implement was found in what appeared to be true, undisturbed boulder-clay, and hence the author contended that the implements he exhibited were not only older than the Neolithic Age in Ireland, but older even than those previously known as Palæolithic, and that they carry the age of man back into the Glacial period.—A paper by Admiral F. S. Tremlett on the Cromlec of Er Lanic was read.—A paper by Mr. Henry Prigg on a portion of a human skull of supposed Palæolithic age from near Bury St. Edmunds was read. The author exhibited the fragment, which consisted of portions of the frontal and right and left parietal bones, and also two flint implements found in the same locality.

DUBLIN

Royal Society, February 18.—Section of Physical and Experimental Science.—G. Johnstone Stoney, F.R.S., in the chair.—On Mr. J. J. Thomson's theory of electricity, by Prof. G. F. Fitzgerald, F.R.S. After explaining Mr. Thomson's theory, Prof. Fitzgerald pointed out that it seems very unlikely that electrified bodies *in vacuo* would not attract or repel one another, inasmuch as experiments seemed to show that the only effect of matter between electrified bodies was to alter the specific inductive capacity of the space, and so Mr. Thomson's theory was more probable as an explanation of how gases had a specific inductive capacity different from unity. In a communication on the mechanical theory of Crookes' force made to the Society in 1878 he had shown that a polarisation of the motions of the molecules in a gas of a particular kind would produce the same stresses as are required to explain electrostatic actions. He explained how a suitable polarisation of the motions or positions of the superficial molecules of a conductor, due to their being on the surface of separation of a constant and variable electric potential, was probably the cause of electrostatic attractions. He pointed out that the ordinary hypothesis that molecules act on one another by means of the ether, and so transmit mechanical stress across intermolecular layers of ether was an assumption of precisely the same kind at intermolecular distances as Maxwell's theory of electricity was at molar distances, and expected that a suitable strain of the superficial molecules of a body would transmit a stress through the ether. Prof. Fitzgerald explained a particular hypothesis as to the nature of this polarisation of the superficial molecules on the vortex theory of atoms, which, however, seemed subject to the very serious objection that it appeared at first sight as if two oppositely electrified planes would tend to move bodily in one direction. The hypothesis was founded on the fact that when two vortex rings are going in the same direction, and one following the other, they attract; but if going in opposite directions they repel one another. The polarisation supposed was that an electrified surface had the superficial molecules all turned in one way, preferably negatively electrified bodies with the faces of the vortex atoms outwards, and positively electrified bodies with their backs outwards. He described how contact-electricity, thermo-electricity, and electrochemical actions might be explained on this hypothesis. This hypothesis was put forward more as an illustration of how a polarisation of the superficial molecules of a body might produce attractions and repulsions than as an hypothesis that really explained electrostatic actions.—On Prof. Osborne Reynolds's mechanical illustrations of heat engines, by Prof. G. F. Fitzgerald, F.R.S. After explaining Prof. Osborne Reynolds's beautiful illustrations, he described three arrangements, one by setting a chain rotating in loops and nodes, one by a balanced centrifugal pendulum, and the third by a pair of masses running on a revolving radius, by means of which all the operations in Carnot's cycle might be illustrated, and explained how to arrange that temperature should be represented by the angular velocity of the rotating masses, and how by means of a chain passing over a pulley in the second case, and by a chain drawn off a table in the third case, it was easy to arrange that the masses should expand when given energy at a constant velocity. He explained how an arrangement in which the masses when not rotating would rest in any position represented an ideal gas in which no internal work is spent in expansion. Prof. Fitzgerald described how by means of a dynamo driven from a battery, a self-acting engine of this kind could be arranged which would show when it was absorbing and when giving out energy. He explained that it was easier to work these models when promiscuous agitation was represented by rotatory motion than when it was really promiscuous, and that it was for this reason rotatory motion was adopted. Mr. Stoney, in some remarks he made on this communication, explained how necessary it was that the energy be really promiscuous, in order that it be subject to the second law of thermodynamics, showing how it would be possible to get a region in which all the radiant energy was plane polarised to radiate into a hotter similarly polarised region without allowing the latter to lose any heat by radiating any of its original energy. He proposed to do this by means of a plate of quartz that rotated through 90° the plane of polarisation of the radiant energy that passed through it, and by a doubly refracting prism, thus admitting heat energy into the second region that was polarised at right angles to that originally there, while the polarised radiant energy that escaped back again was returned into the region it came from, being bent out of the path of the entering energy by the doubly refracting prism.—Prof. Fitzgerald exhibited a lecture balance. In this arrangement a beam of light fell parallel to the axis of the balance on a mirror attached at 45° to this axis, so that the reflected ray turns through the same angle as the balance. The balance was provided with an arrangement by which its stability could be altered very much, so as to be suitable for either rough or delicate weighing. As the difference of weights in the pans of a balance is proportional to the tangent of the angle of deflection, a vertical scale uniformly divided showed by the position of the spot of light the difference of the weights in the pans in a manner that could be easily read by a large class.

Section of Natural Science.—V. Ball, F.R.S., in the chair.—Gerrard A. Kinahan read a paper entitled "Notes on the Coal-fields of the North-West Territories of Canada."

CAMBRIDGE

Philosophical Society, March 10.—Mr. D'Arcy W. Thompson, B.A., Trinity College, was elected a Fellow.—The following papers were communicated:—Continuation of observations on the state of an eye affected with astigmatism, by Sir G. B. Airy. The paper consisted of a continuation of observations already recorded in the publication of the Society. The author gave tables of the distances from the cornea of the left eye at which a luminous point appears respectively as a horizontal and a vertical straight line. The observations have extended from the year 1825 to the present time.—On the measurement of the electrical resistance between two neighbouring points on a conductor, by Lord Rayleigh. In some experiments described in a recent paper read before the Royal Society, the author had occasion to arrange a set of resistance coils so that the difference of potential between two points on a circuit through which a current is flowing shall be exceedingly small and yet known to a high degree of accuracy. In the present communication the method is applied to determining the difference of potential between two neighbouring points on a conductor through which the same current is flowing. The resistance coils are adjusted until the difference of potential measured by the current produced in a galvanometer of comparatively high resistance is the same in the two cases. The method has been applied by Messrs. Ward and Shackle at the Cavendish Laboratory to determine the value of a small resistance of about 1/200 of a B.A. unit, and is capable of very great accuracy.—On dimensional equations and change of units, by Mr. W. N. Shaw.

SYDNEY

Linnean Society of New South Wales, January 30.—C. S. Wilkinson, F.G.S., president, in the chair.—The President delivered an address on the progress of science in Australia during the past year, and concluded by a general account of the geology of the country from an economic point of view.—The following papers were read:—Supplement to the Descriptive Catalogue of the Fishes of Australia, by William Macleay, F.L.S., &c. This paper contains references to, or descriptions of, 157 species of fishes not mentioned as Australian in the previously printed catalogue. The species here described for the first time are from the pens of Dr. Klunzinger, Dr. Günther, Messrs. De Vis, Ramsay, Macleay, and R. M. Johnston. The total number of Australian fishes now amounts to 1291 species.—On some new Batrachians from Queensland, by Charles W. De Vis, M.A. This paper contains descriptions of three new species of frogs, collected at Mackay, by Mr. H. Ling Roth, and named by the author as follows:—*Limnodynastes lineatus*, approaching *L. peronii*, but distinguished by shorter hind limbs, and continuity of dorsal stripes; *L. olivaceus*, and *Hyla rothii*.—On plants indigenous in the immediate neighbourhood of Sydney, by Mr. Haviland. This, the sixth of the series, gives an account of some species of the genus *Darwinia*, showing the supposed manner of fertilisation, and explaining, to some extent, the prevalence of the species *D. fascicularis*, notwithstanding the great disproportion between the fertilised and the fertilising flowers.—Studies on the Elasmobranch skeleton, by William A. Haswell, M.A., B.Sc.

PARIS

Academy of Sciences, March 24.—M. Rolland in the chair.—Influence of the density of explosive gaseous mixtures on pressure; isomerous mixtures, by MM. Berthelot and Vieille.—Separation of gallium from boric acid, by M. Lecoq de Boisbaudran. This concludes the series of exhaustive experiments conducted by the author for the purpose of obtaining the complete separation of gallium from all other known elements. A final communication is promised on the separation of gallium from tartaric acid, taken as a type of organic substances whose presence might affect several of the reactions indicated during the course of the foregoing studies.—On the concordance of some general practical methods, based on apparently opposite principles, for determining the tensions in a system of points connected by electric links and kept in equilibrium under the action of external forces, by General L. F. Menabrea.—Observations of Saturn and Uranus made at the Observatory of Nice, by M. Perrotin. These observations were made under unusually favourable conditions by Messrs. Norman Lockyer, Thollon, and Perrotin on March 16 and 18. The outer ring of Saturn appeared to consist of three distinct rings slightly diminishing in breadth outwardly, and each apparently made up of numerous subdivisions. Uranus, seen on the 18th, presented in some respects the general aspect of Mars, with dark spots towards the centre, and a white speck like the pole of that planet at the angle of position 380° on the edge of the disk. Mr. Lockyer, who was present at the sitting, read a telegram from M. Perrotin announcing a repetition of the observations on March 23 under equally favourable conditions.—Note on the polar spots in Venus, observed at the Meudon Observatory, by M. E. L. Trouvelot. These spots seem to be permanent, although varying greatly in brilliancy, and often rendered invisible by the distance of the planet towards superior conjunction.—On the thrust of a mass of sand with horizontal upper surface against a vertical wall, in the neighbourhood of which its inner angle of friction is assumed to be slightly increased according to a definite law, by M. J. Boussinesq.—On the extension of the theorems of Pascal and Brianchon to surfaces of the second order, by M. A. Petot.—On a probable cause of the discrepancies found to exist between the electromotor force of voltaic piles and the theoretical results of thermochemical observations, by M. G. Chaperon.—Note on the action exercised by polarised light on cellulose solutions in Schweizer's fluid, by M. A. Levallois.—Remarks on a case of dimorphism observed with the hyposulphite of soda ($NaO,S_2O_2,5HO$), by MM. F. Parmentier and L. Amat.—Researches on the sulphites and bisulphites of soda, by M. de Forcrand.—On the dissymmetric chloro-iodurettes and bromo-iodurettes ethylenes, by M. L. Henry.—Experimental researches on the influence of extremely high pressure on living organisms, by M. P. Regnard. These experiments were conducted by means of the press of MM. Cailletet and Ducretet, yielding pressures of 1000 atmospheres and upwards. Soluble ferments were unaffected by extreme pressure; starch at 1000 was changed to sugar; algæ at 600 were decomposed, and the carbonic acid liberated; infusoria, leeches, and mollusks at 600 were rendered insensible, but recovered when the pressure was removed; fishes with swimming bladder resisted 100, became insensible at 200, and succumbed at 300. These results show interesting coincidences with the phenomena observed by the naturalists of the *Talisman* at various oceanic depths.—On the action of cold on microbes, by MM. R. Pictet and E. Yung. Many inferior organisms resisted temperatures of from $-70°$ to $-130°$ C. for several hours. Others were either killed or lost their germinating functions.—On peritoneal transfusion, by M. G. Hayem.—On the medullar mechanism of paralyses of cerebral origin, by M. Couty.—Anatomical description of the fœtus of a gorilla recently brought from the Gaboon, by M. J. Deniker.—On the anatomy of the *Peachia hastata* discovered by Gosse in 1855, by M. Faurot.—On the structure of the auditory organ in *Arenicola grubii*, Clap., by M. Et. Jourdan.—Anatomy of the muscles in the abdomen of the bee, by M. G. Carlet.—Note on a deposit of gold at Peñaflor in Andalusia, by M. A. F. Nogués.—On certain changes in the appearance of the sky recently observed at Nice, by M. L. Thollon.—On the crepuscular glows observed at San Salvador, in Central America, by M. de Montessus.

BERLIN

Physiological Society, February 29.—Dr. Weyl spoke about the secretion in man of nitric acid, which he had analytically proved, and which, by administration of ammonia, he was able quantitatively to increase. After it had been experimentally established that a direct transference of albumen into urine was impossible, it was recognised that the formation of urine was no oxidising process of the albumen, but was effected circuitously by the formation of amido-compounds, whose introduction into the animal body increased the quantity of the secreted urine. The formation of urine took place through alimentation of the simplest amidinous matters, ammonia increased the secretion of urea. Similar to the action of ammonia was that of a carbonate of ammonia, as also when combined with organic acids, while from hydrochlorate, sulphate, and mineral acid salt, the ammonia did not become transformed into urea. On perusing the literature of the subject, Dr. Weyl found that in all experiments the ammonia was never wholly transformed into urea, but that there was always a residue of from 10 to 40 per cent. which was not represented in the urine. This residue of ammonia, he conjectured, was consumed in the animal body, and he therefore

made search in animals to which he had given ammonia, for the presence of nitric acid. Rabbits not being adapted for precise experiments in connection with the transmutation of matter, he experimented on dogs, but always failed to discover any nitric acid in their urine. Even when he had given these animals nitrates, no nitrates could be found in their urine. He now tried experiments on men, and soon ascertained that in their case nitric acid was a perfectly normal product of secretion. The quantitative determinations, even where no nitrate was administered, yielded from 400 to 600 mgr. of nitric acid in the contents of the urine. The quantity of nitric acid varied with the nourishment, and by the use of vegetables could be considerably increased. To test the accuracy of his conjecture regarding the fate of the ammonia not converted into urea, he took with a uniform regulated diet citrated ammonia in doses of from six to eight grammes, and found in two series of experiments a very marked increase of the nitric acid in the urine—in one case, for example, of from about 500 to over 800 mgr. This constant presence in no inconsiderable quantities of nitric acid in the urine of man ought, in experiments connected with the change of matter, to be carefully attended to. Historically, Dr. Weyl observed that more than thirty years ago Bence Jones had made the assertion that in the animal body ammonia was oxidised into nitric acid. He was, however, unable to substantiate this proposition without raising objections.—Prof. Kronecker reported on the discovery of a coordination centre in the movements of the ventricles of the heart, made by Herr Schmey, a student in his department of the Physiological Institute, and which he (Prof. Kronecker) had repeatedly verified. In an examination of the changes in the dimensions of the heart in the process of contraction, needles were thrust in the most various directions into the heart of a dog after it had been laid bare, an operation which, as was known by experience, had no influence on the movements of the heart. When in this operation the needle came upon a certain small spot on the lower border of the upper third of the *septum cordis*, the ventricles of the heart at once ceased to beat, and, diastolically dilated, fell into fibrillar convulsions, which were soon followed by the death of the ventricles of the heart. It was not possible by any appliances to restore the ventricles to their normal action. The vestibules continued to beat normally, but the ventricles no longer discharged their blood, and soon, in consequence of the palsy of the heart, general death set in. This instantaneous death of the heart through a prick in a particular part of the septum—the stoppage thereby produced of each coordinate contraction of the muscles of the heart—was up to the present wholly without analogy. What approached nearest to this fact was the well-known phenomenon that a compression of the coronary artery produced in a short time a cessation of pulsation and fibrillar convulsions. On withdrawing the compression, however, the pulsations of the ventricle were resumed. In the case of a prick, on the other hand, the effect followed altogether much more quickly, quite instantaneously in fact, and the ventricles, not able again to discharge their functions normally, were for ever motionless. This phenomenon Prof. Kronecker explained in the following manner. By the prick of the needle a coordinating centre in the movements of the ventricles of the heart, having its seat at the spot in question in the septum, was touched and destroyed. The finding of this centre afforded the physiological key to the riddle not unknown in surgery, that many very slight heart-wounds, pricks of needles, for example, which did not even penetrate, produced sudden death. It was now the task of anatomical investigation to demonstrate the existence of this centre now experimentally proved to exist. Prof. Kronecker and Herr Schmey have demonstrated this important experiment to the satisfaction of the Society.

VIENNA

Imperial Academy of Sciences, January 17.—M. Tüllig, on a new mode of telephonic transmission of sound (sealed packet).—J. Kachler and F. V. Spitzer, on Jackson's and Menke's method of preparing borneol from camphor.

January 31.—W. Biedermann, contributions to general nerve and muscle physiology (xiv. communication), on the heart of *Helix pomatia*.—G. von Niessl, on the astronomical relations at the meteoric fall of Mocs (Transylvania) on February 3, 1882.—L. Koller, on some general laws relating to knot-combinations.—A. Lustig, on the degeneration of the olfactory epithelium of rabbit after destruction of the olfactory lobes.—F. Zehden, attempt to explain the sunspots.—J. Hann, on the results of the meteorological observations made by Major von Machow at Pungo Andongo and Malunge in the interior of tropical South-West Africa in the years 1879–80.

February 7.—J. Odstrzil, on the mechanism of gravitation and inertia.—R. Benedikt and K. Hazura, on morin.—E. Goldstein, on the influence of conducting surfaces within the second stratum of the kathode light of Geissler's tubes.—S. Exner, on the innervation of the larynx.

February 14.—E. Hering, contributions to general nerve and muscle physiology (xv. communication), on the positive after-variation (*Nachschwankung*) of the nerve-current after electrical stimulation.—J. Klemencics, researches on the relation between electrostatic and electromagnetic measure.—F. von Hochstetter, seventh report of the Prehistoric Commission on its work during the year 1883.—R. von Wettstein, on the laws of growth of plant organs.

March 6.—J. Singer, contribution to a knowledge of the motor functions of the lumbar cord of the pigeon.—J. Redtenbacher, synopsis of the larvæ of Myrmeleoideæ.—J. H. List, on calyx-cells in the vesicle epithelium of the frog.—K. Zulkowsky, on coloured combinations of phenol with aromatic aldehydes.—F. von Hochstetter, reports of the Prehistoric Commission on the researches carried out in Moravia by J. Szombathy and W. Müller.—E. von Marenzeller, contribution to a knowledge of Adriatic annelids (iii. paper).—V. von Ebner, on the planes of solution of calcareous spar and aragonite.—H. Pitsch, on the value of Fermat's rule for the propagation of light in double refracting media.—Von Barth and M. Kretschy, on picrotoxin.—J. Herzig, studies on quercetin and its derivatives.—E. Häckel, gramina nova, vel minus nota.—A. Rosoll, contributions to the histochemistry of plants.—A. Adamkiewicz, on new stainings of the spinal cord.—F. K. Ginzel, researches on eclipses, especially on ascertaining empiric corrections of the orbit of the moon.

March 13.—E. Hering, contributions to general nerve and muscle physiology (xvi. communication), on the variations of nerve-current caused by unipolar stimulation in tetanisation.—C. Puschl, on the second axiom of mechanical theory of heat and on the behaviour of water.—K. Olzewski, on the liquefaction of hydrogen.—On the density of liquid oxygen, by the same.—On the point of solidification of some gases and liquids, by the same.—G. Adler, on the energy in the electrostatic field.—C. Goldstein, on the passing of electricity through vacua.

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